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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/343,092	06/30/1999	HIDEO SAMURA	50059-048	7482

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EXAMINER

DICKENS, CHARLENE

ART UNIT	PAPER NUMBER
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2855

DATE MAILED: 04/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/343,092

Applicant(s)

SAMURA, HIDEO

Examiner

Ex. Dickens

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. In view of the appeal brief filed on 4-25-02, PROSECUTION IS HEREBY REOPENED. A new grounds of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 4-7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. in view of Sugitani et al. Kitahara et al. teaches a head for ink-jet printer comprising: a substrate 42 on which a plurality of ink nozzles 54 and a plurality of ink passages 56 each communicating separately to each of the ink nozzles; an inorganic substrate 44 which is joined with said substrate and is provided with ink chambers 46 each communicating separately to each of the ink passages, and a piezoelectric element of ferroelectric substance (col. 9, lines 5, 6) for changing separately a capacity of each of the ink

chambers to jet an ink from said ink nozzles through said ink chambers; wherein said ink passages are fine as compared with said ink chambers and said ink nozzles are fine as compared with said ink passages (Fig. 1). However, Kitahara et al. does not teach specifically an etched silicon substrate and a pitch of the ink nozzles is approximately $20\mu\text{m}$ (claims 1, 12). Sugitani et al. teaches a substrate can be a silicon substrate (col. 3, lines 22, 23) and can be processed finely using a plasma etching method (col. 3, line 27) for the purpose of providing a small sized liquid-jetting head having compacted multi-orifices (col. 1, lines 61-63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a substrate can be a silicon substrate and can be processed finely using a plasma etching method in Kitahara et al. as taught by Sugitani et al. for the purpose of providing a small sized liquid-jetting head having compacted multi-orifices (col. 1, lines 61-63). Next, a pitch of the ink nozzles is approximately $20\mu\text{m}$ is claimed. This serves the purpose to better facilitate ink flow. Kitahara et al. does not specifically teach a pitch of $20\mu\text{m}$. Nevertheless, Kitahara et al. does provide tapering of the nozzles to better facilitate ink flow (col. 6, lines 15-21). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a pitch of the ink nozzles is approximately $20\mu\text{m}$ in the modified Kitahara et al. for

the purpose to better facilitate ink flow.

Claim 4: Kitahara et al. teaches said ink nozzles have tapered configurations (Figs. 1, 4, 5).

Claims 5, 6: Kitahara et al. teaches said silicon substrate has a construction in which plural silicon substrates are laminated and wherein said ink nozzles and said ink passages are communicated by laminating the silicon substrate in which said ink nozzles are processed and the silicon substrate in which said ink passages are processed (col. 6, lines 50-68).

Claim 7: Kitahara et al. teaches an ink tank for storing ink supplied to said ink chambers of said printer head (col. 5, line 46, col. 6, line 8).

Claim 11: Kitahara et al. teaches said ink passages have a cross sectional area less than a cross-sectional area of said ink chambers, and wherein said ink nozzles have a cross-sectional area less than a cross-sectional area of said ink passages (Fig. 1).


4. Applicant's arguments with respect to all of the claims have been considered but are moot in view of the new ground(s) of rejection.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Dickens or the supervisor Edward Lefkowitz whose telephone numbers are (703) 305-7047 or (703) 305-4816, respectively. Any

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inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0956. The fax numbers are (703) 305-3431 and (703) 305-3432.


cd/dickens
April 28, 2003


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